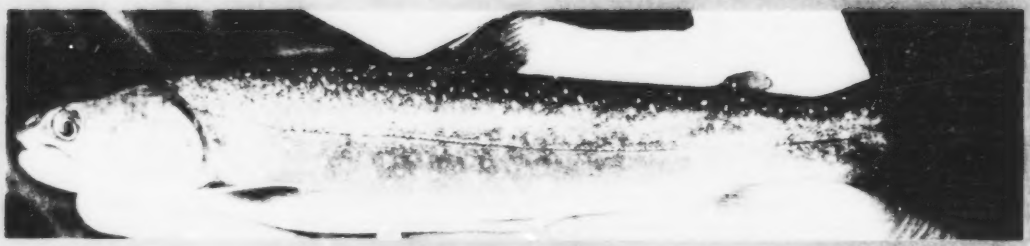
ALBERTA'S SALMONID IDENTIFICATION COURSE



Alberta
ENVIRONMENT

Trout Unlimited
Canada

Alberta's Salmonid Identification Course

By

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December 2000

Alberta Environment
Natural Resources Service
Fisheries and Wildlife Management Division

Pub. No.: T/591
ISBN: 0-7785-1479-X
Date: December 2000

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The suggested appropriate citation for this document is:
Stelfox J. D., D. M. Baayens and D. K. Berry. 2000. Alberta's Salmonid Identification Course. Alberta Environment. Fisheries and Wildlife Management Division.

Cover photos:
Top--Bull Trout (Jim Stelfox)
Middle-- Bull Trout (Gary Louie)
Bottom-- Bull Trout (Kelsey Kure)

[1] -- David K. Berry. Alberta Environment, Fisheries and Wildlife Management Division, South Tower, Main Floor, Petroleum Plaza, 9915-108 St. Edmonton, Alberta, Canada T5K 2G8, (780) 427-8347, Dave.Berry@gov.ab.ca

PREFACE

Alberta's Salmonid Identification Course was developed, in collaboration with Trout Unlimited Canada, to provide a quality teaching tool to staff and for the delivery of educational programs to the public. Undoubtedly, sportfishing organizations and schools will also make use of the Salmonid Identification Course in their own information and education programs. Emphasis is on the sport fish species most commonly found in the streams of the Eastern Slopes; however, future addition of all sport fish species is planned.

The pilot testing conducted in 1999 and 2000 established a high degree of confidence in the quality of the educational material and instructional methods that have been developed and validated.

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1.0 INTRODUCTION

The contents of this document provide an excellent teaching tool for the identification of salmonids (trout, char, whitefish and grayling). Pilot testing of the material that was developed and validated (Stelfox et al. 2000[2]) established a high degree of confidence in the quality of the educational material and instructional methods.

The results of the pilot study indicate that problems with fish misidentification can be overcome. Although fish identification is not always easy for the inexperienced, with training and guidance even the novice can become comfortable with the task. As a result, it is possible for non-anglers and novice anglers using the key to be as proficient at fish identification as experienced anglers are without the key. For example, the pilot testing found that non-anglers and anglers who had fished for less than one year had average scores of 38% on the test without the key and 84% with the key. By comparison, anglers who had fished more than 10 years had an average score of 81% without the key.

Compliance with regulations is essential for regulations to work. Anglers must not only be aware of regulations, but must also be able to identify the species of fish that they catch. Fortunately, it appears that most anglers are conscientious and willing to comply with fishing regulations, but as regulations have become more complex, the issue of fish misidentification has become an increasing concern.

To date, fish identification information has consisted of providing anglers with drawings, pictures or keys in the sportfishing regulations or placing signs at various locations along some waters. One problem with pictures or drawings is that some have been of poor quality, or the descriptions that accompanied them made reference to features that were subjective or showed considerable variability. Keys, while more precise, often use terminology or make reference to features that many anglers find confusing or overwhelming. Better public information and education was required that would assist anglers in the fast and accurate identification of fish.

Alberta's Salmonid Identification Course includes a test, a dichotomous key, example pictures and teaching instructions. The test features 40 photos covering the nine salmonid species (trout, char, whitefish and grayling) anglers would most commonly catch in Alberta. Photos were selected that showed the variability in appearance and colour that can occur between adult male, adult female and juvenile fish of each species. There was no intent to use photos that were difficult or tricky to identify. Photos identified as of questionable quality in the pilot testing were replaced.

The salmonid identification key is laid out in a step-by-step sequence to lead participants through the process of recognizing the key-identifying features used to separate the fish species. The dichotomous key also includes pictures that show only that portion of the fish with the key-identifying feature (e.g., the dorsal fin). Labelled example pictures of the whole fish (one for each species) are provided to assist people who wish to view the entire fish.

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[2] Stelfox J. D., G. E. Shumaker, D. M. Baayens and D. K. Berry. 2000. The Development of an Identification Key and Test for a Salmonid Identification Course in Alberta. Alberta Environment. Fisheries and Wildlife Management Division. 59 pp.

2.0 COURSE OUTLINE

Several distinguishing features of sport fish can be used to tell apart the various species; however, some practice is required in the use of these features to separate closely related members such as the salmonids (trout, char, whitefish and grayling). The technique used is referred to as "eyeballing fish" – species identification at a glance based on simple criteria such as body form, body structures and markings. Anglers will find the "eyeballing technique" works easiest for identifying fish families and sport fish species. For identification of non-sport fish species and uncommon sport fish species, the detailed keys given in the book "*The Fishes of Alberta*" (Nelson and Paetz, 1992[3]) are recommended.

1. At the start of the course, participants are asked to complete the five-page photo test without assistance to establish individual skill levels in fish identification based on personal knowledge and experience. Although some may find this task frustrating, at the end of the course their personal improvement in fish identification will be all that more rewarding.

2. Participants are now provided the course material (dichotomous key and example pictures). During the training session of the course, detailed discussions on the techniques of fish identification are encouraged. The five-page photo test must be turned over and not viewed during the training session. Instructors must advise participants of the pit falls commonly encountered during the course.
   a) Improper use of the key.
      Although lack of knowledge is a major factor in fish misidentification of photos, especially on the first attempt, this is not the only factor. The photos and key have been quality tested and can not be held at fault. The most significant error made by participants is not using the key properly--skipping steps and making mistakes. Emphasis must be placed on the importance of using the key starting at the top and following the complete sequence each time for each test photo. Interestingly, improper usage of the key tends to be more of a problem with experienced anglers than with non-anglers and novices.

   b) Distractions and Carelessness
      Participants must be reminded to ensure that they have put a check mark in each row, that there is only one check mark in each row, and that it is in the column intended for the species. Forgetting to mark a row, marking the same row twice or marking under the wrong species column can produce common errors.

   c) Difficulty in Identifying Juvenile Fish
      Participants must pay special attention to the differences between juvenile and adult fish of the same species. Participants should also ask questions regarding any unfamiliar terminology. During the testing phase for the material used in this course, some participants incorrectly assumed that the parr marks on juvenile

[3] Nelson, J. S. and M.J. Paetz. 1992. The fishes of Alberta. 2nd. Edition. The University of Alberta Press and The University of Calgary Press. 437 pp.

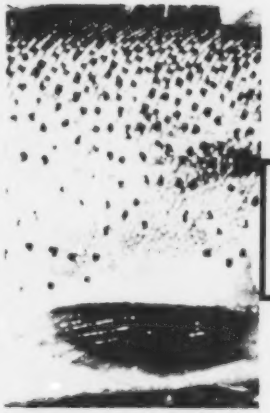
rainbow trout were black spots with pale halos, which resulted in them misidentifying the fish as a brown trout.

3. When the participants feel comfortable that they have completely reviewed the key, and with the key still in front of them for their use, each is given a clean test sheet so they can do the photo test a second time. The two pages of fish example pictures must be turned over and not viewed during the second test. Participants should do the test separately and not discuss their answers.

4. The two sets of tests are graded and a summary session is held to discuss the course and material. Before marked tests are returned to participants, they are informed of any photos that they misidentified on the second attempt and asked to re-identify the fish in each of those photos. The follow-up review helps determine that an individual was using the key and key-identifying features properly, and helps individuals learn how to do even better.

3.0 DICHOTOMOUS KEY

Salmonid family



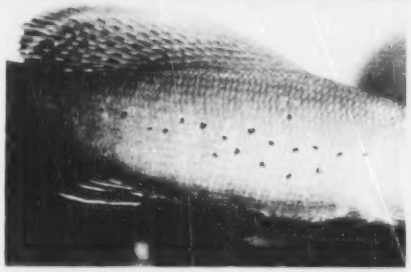
Jim Stelfox

Small scales
(Trout and char)
see key on next page

Large scales
(Whitefish and Arctic grayling)

Lorne Fitch

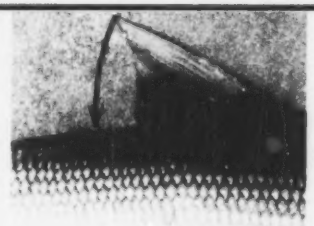
Top of dorsal fin rounded
(Arctic grayling)



Brad Fenson

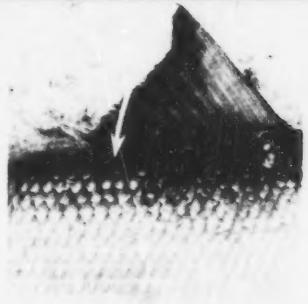
Top of dorsal fin pointed

Top of dorsal fin extends beyond back of fin when fin is flattened
(Lake whitefish)



Dean Baayens

Top of dorsal fin does not extend beyond back of fin when fin is flattened
(Mountain whitefish)



Dean Baayens

Partial key for
trout and char

Black spots on sides
(Trout)

No black spots on sides
(Char)

Pale haloes
around black spots
(Brown trout)

Kyle McNeilly

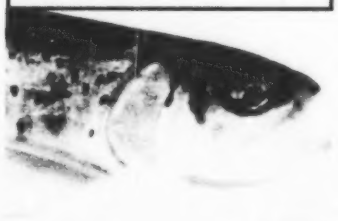
No pale haloes
around black spots

No spots or markings
on dorsal fin
(Bull trout)

Kevin Egan

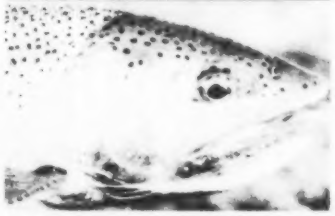
Spots or markings
on dorsal fin

Red-orange slash
under jaw
(Cutthroat trout)



Jim Stelfox

No red-orange slash
under jaw
(Rainbow trout)



Egidio Benacchio

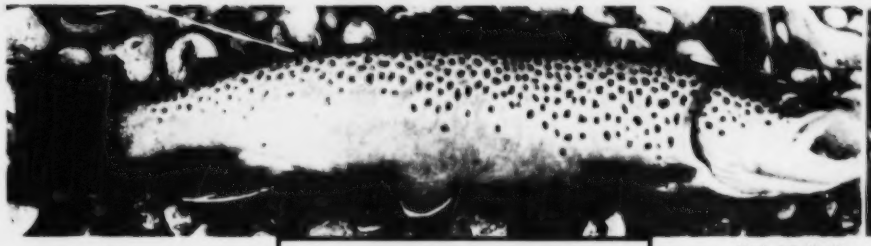
Pale spots on dorsal fin;
tail deeply forked
(Lake trout)

Duane Harding

Black markings on dorsal fin;
tail not deeply forked
(Brook trout)

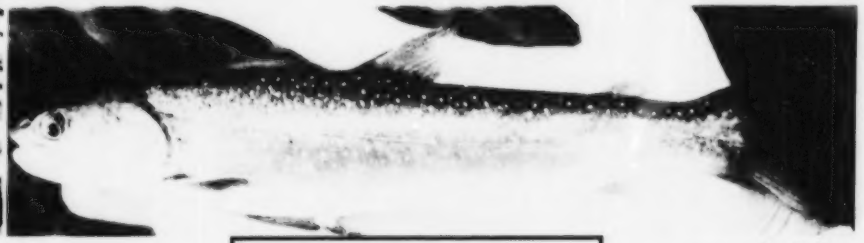
Jim Stelfox

4.0 EXAMPLE PICTURES



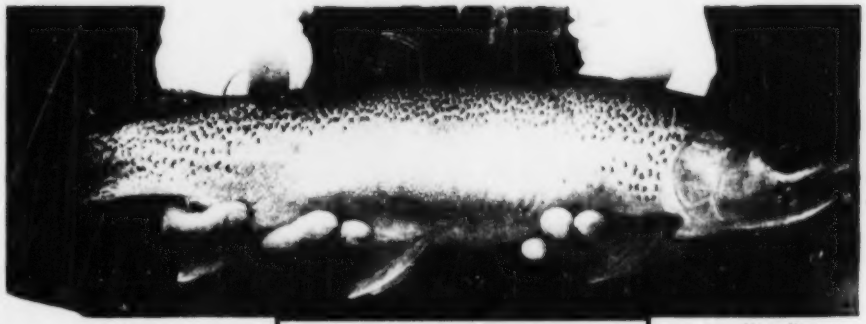
Kyle McNeilly

Brown trout



Jim Stelfox

Bull trout

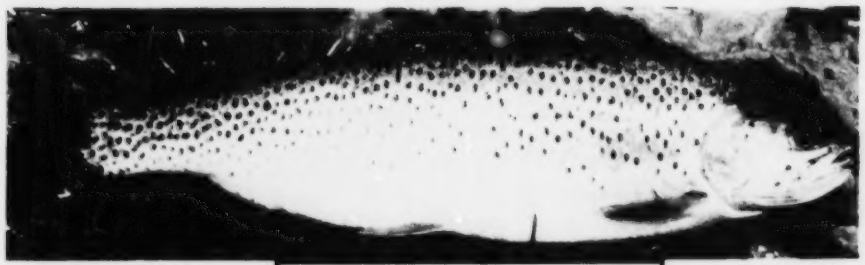


Dean Baayens

Rainbow trout

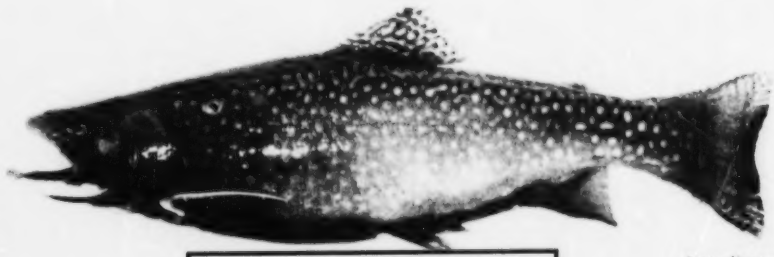
Maciek Jaworski

Lake trout



Kyle McNeilly

Cutthroat trout



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Brook trout

Kyle McNeilly

Arctic grayling

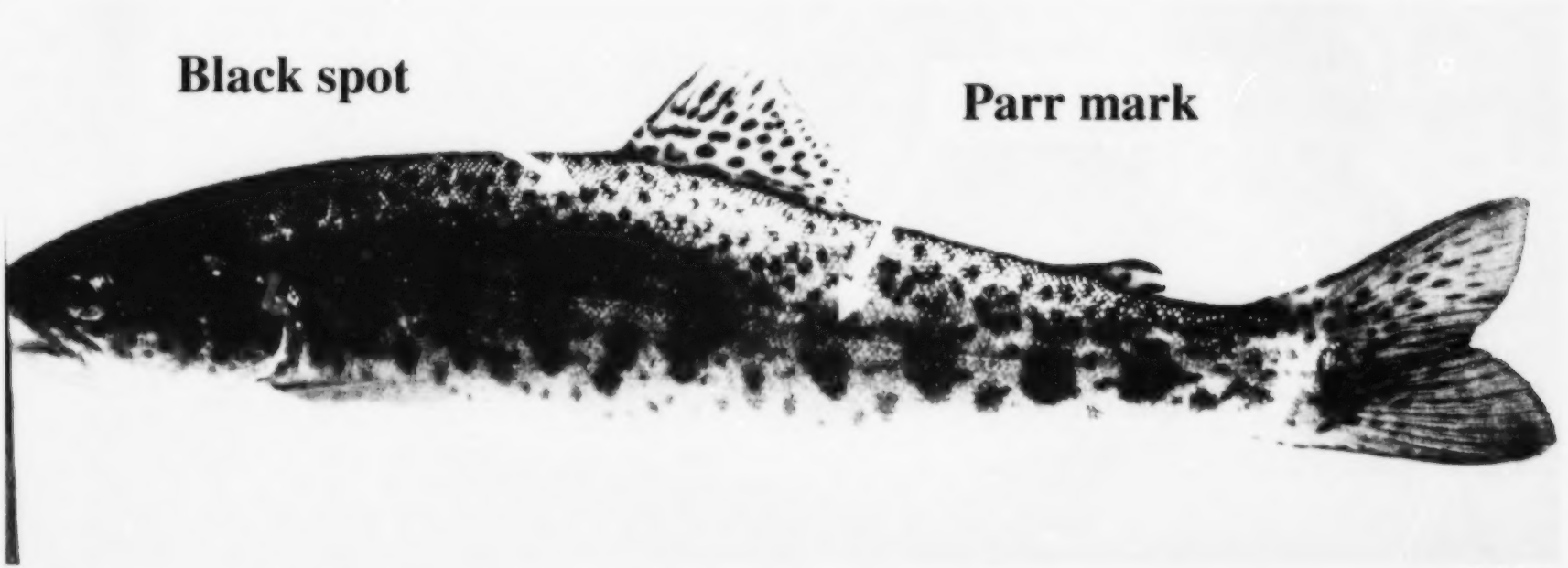
Dean Baayens

Mountain whitefish

Duane Harding

Lake whitefish

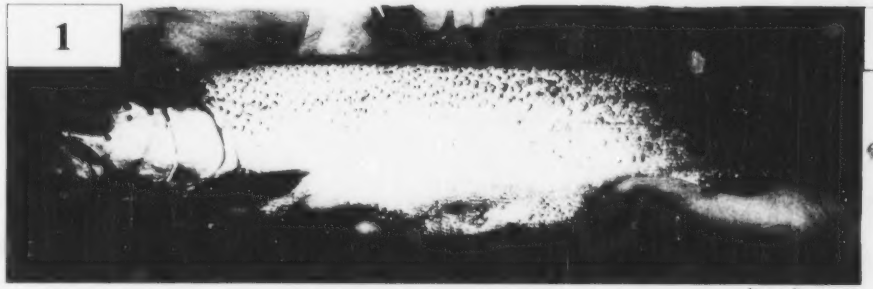
Parr markings
on a juvenile rainbow trout



Wade Ewen

5.0 SALMONID IDENTICATION TEST

1



Dean Baayens

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Dean Baayens

3

Dean Baayens

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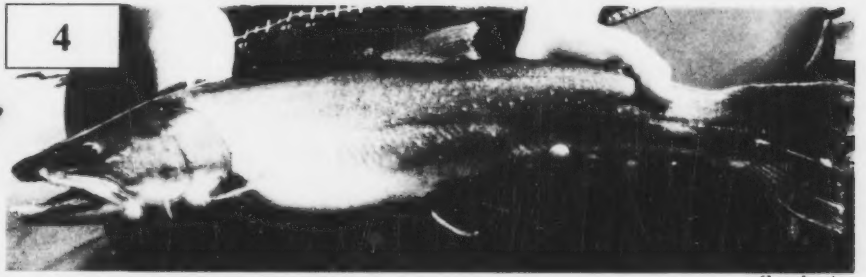

Gary Louie

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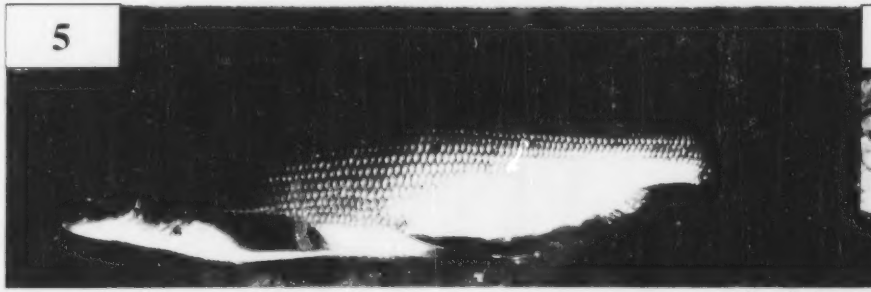

Dean Baayens

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Barry Mitchell

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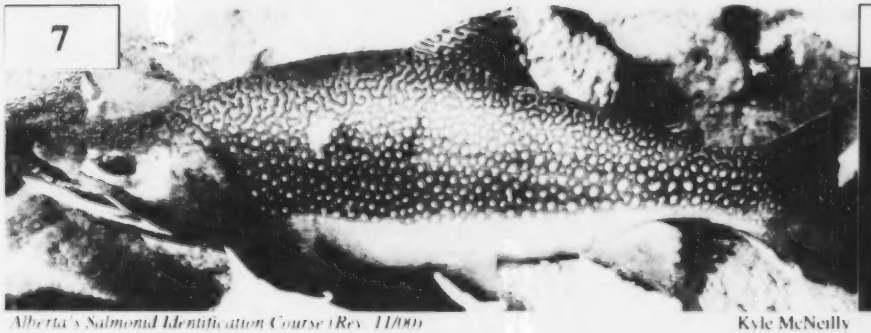

Kyle McNeilly

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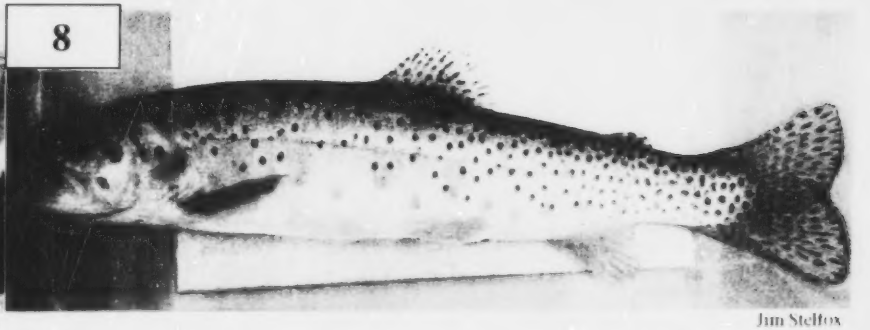
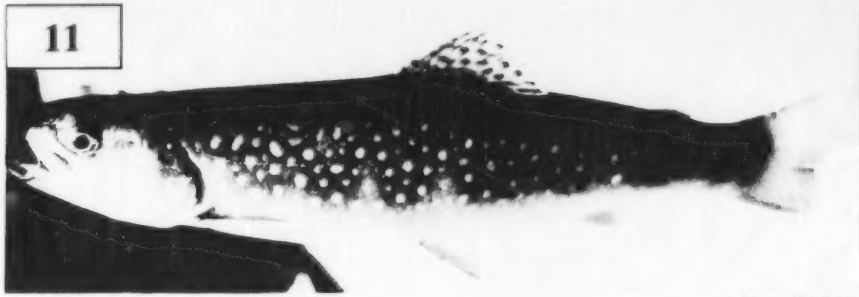


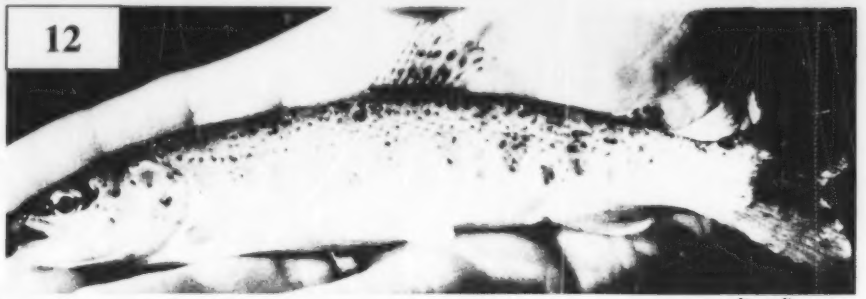
Jim Stelfox

Jim Stelfox

Dean Baayens



Barry Mitchell



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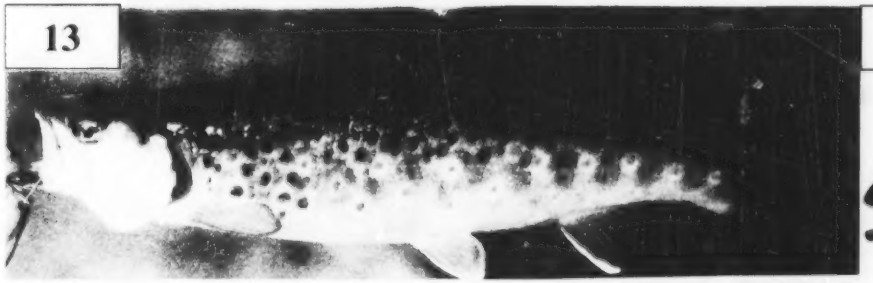
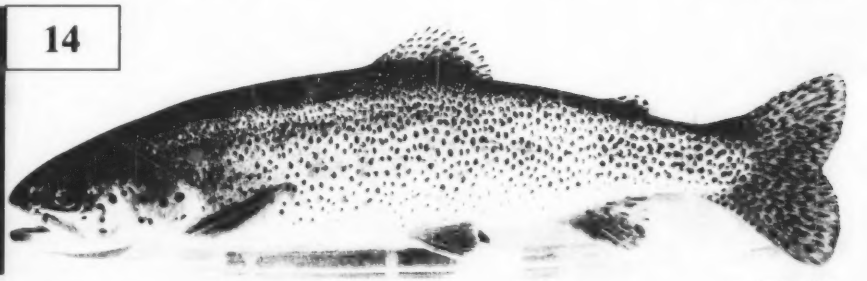
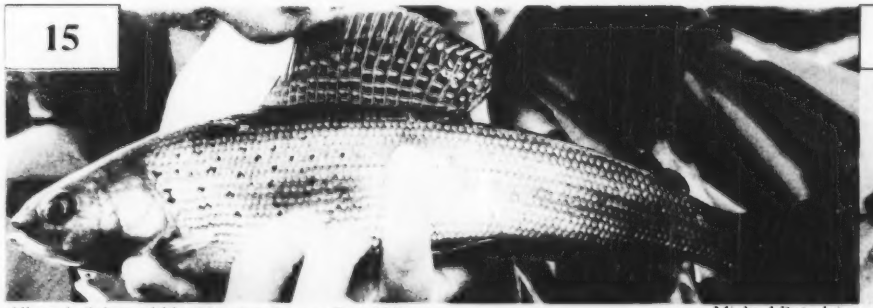


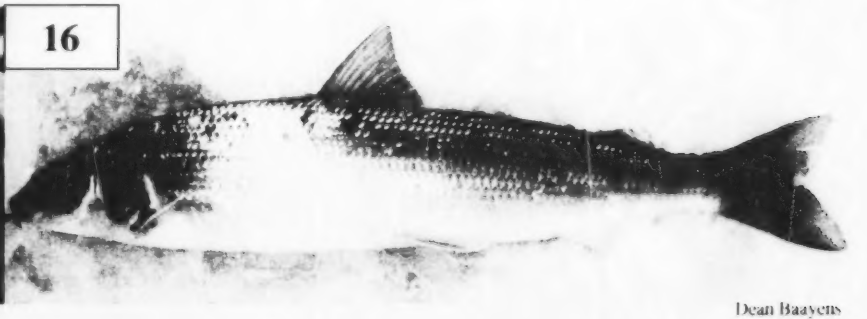
Barry Mitchell



Jim Stelfox



Michael Bousclair



Dean Baayens

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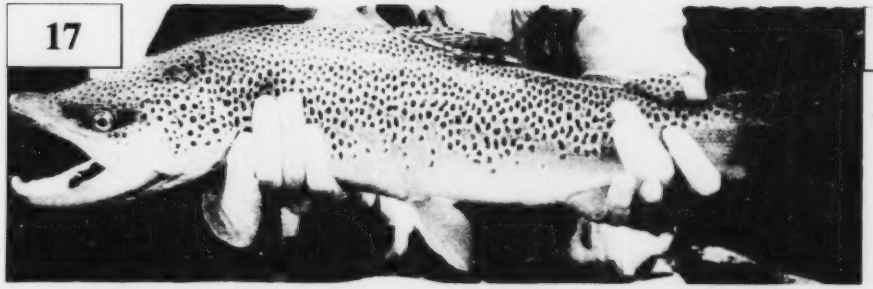

Christopher Martinsen

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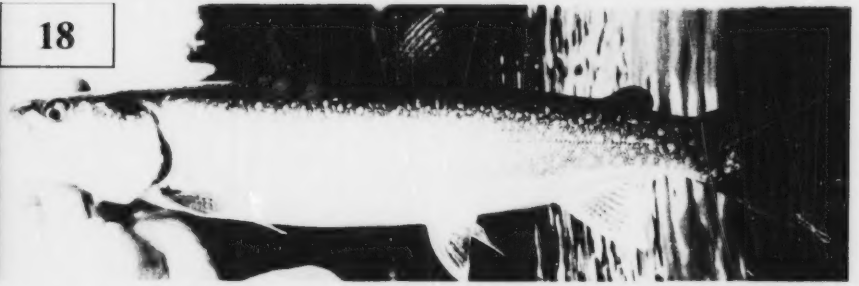

Dean Baayens

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Kelsey Kure

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Jim Stelfox

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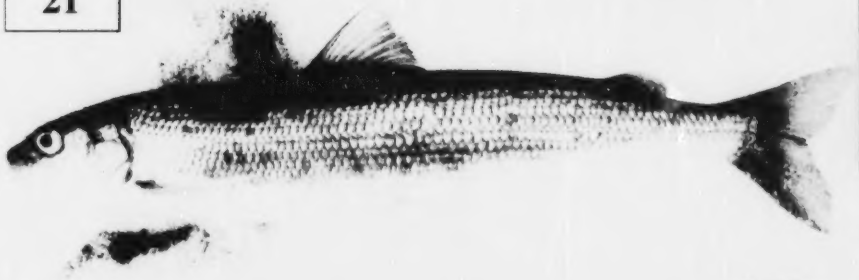

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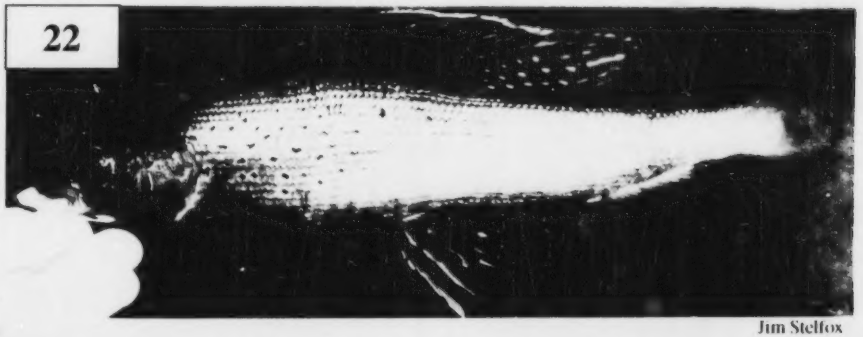

Jim Stelfox

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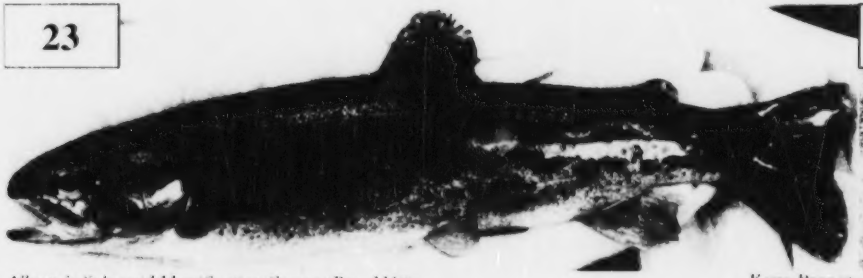

Kerry Brewin

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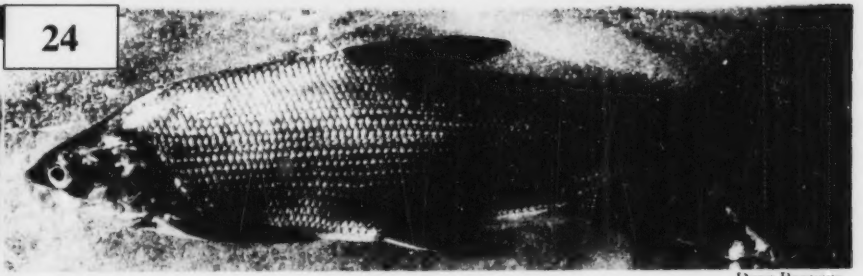

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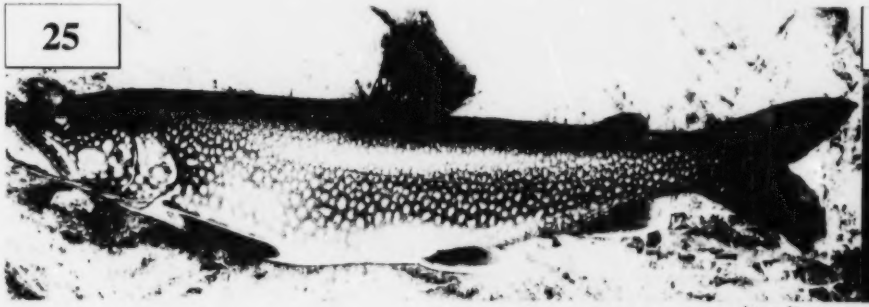

Dean Baayens

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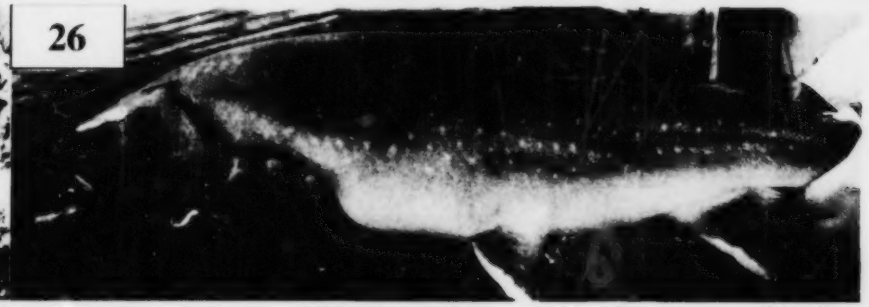

Kelsey Kure

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Dean Baayens

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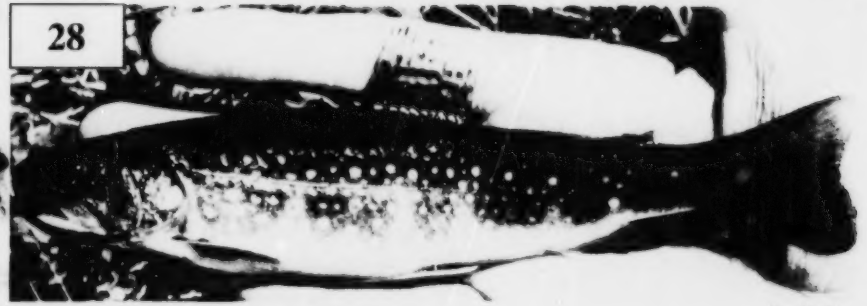

Jim Stelfox

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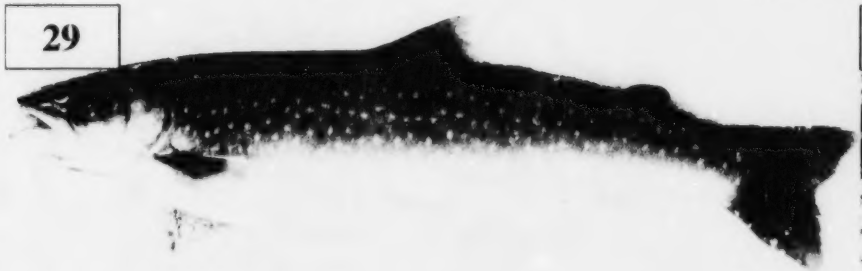

Rocky Hornung

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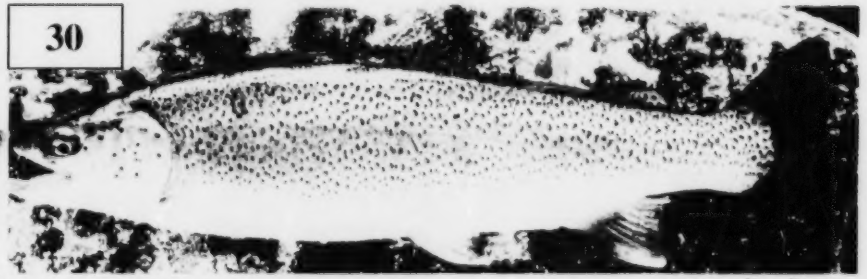

Dean Baayens

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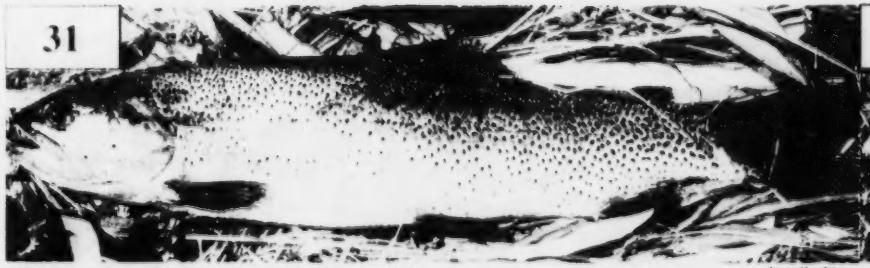

Jim Stelfox

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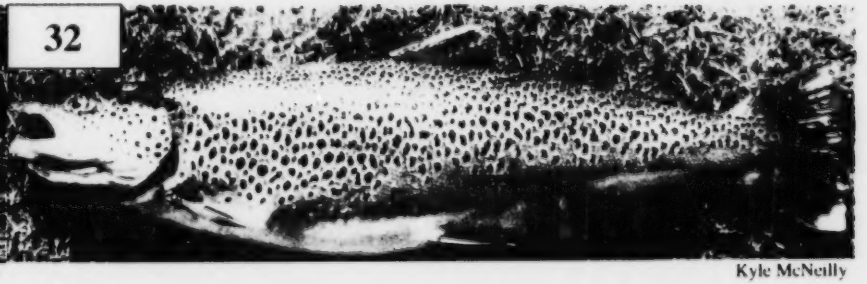
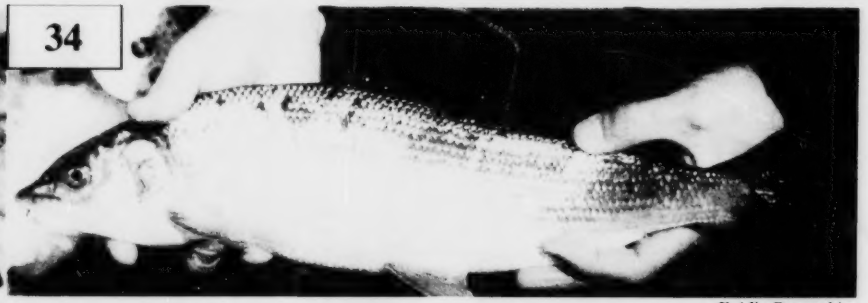


Kyle McNeilly

Jim Stelfox



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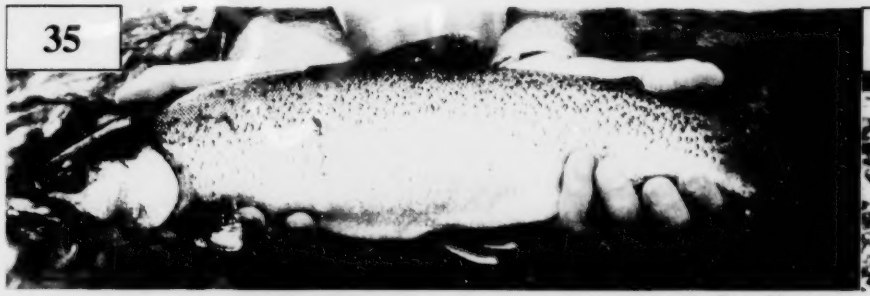

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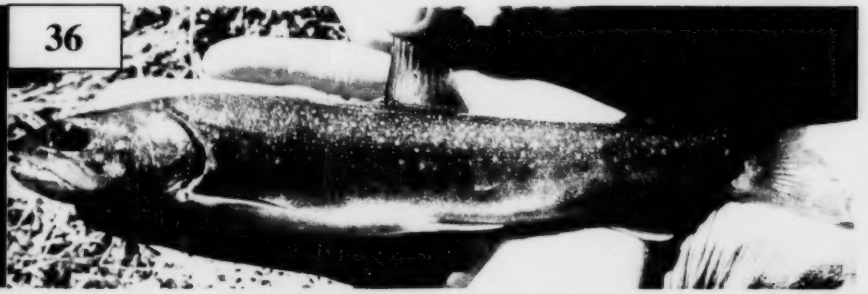
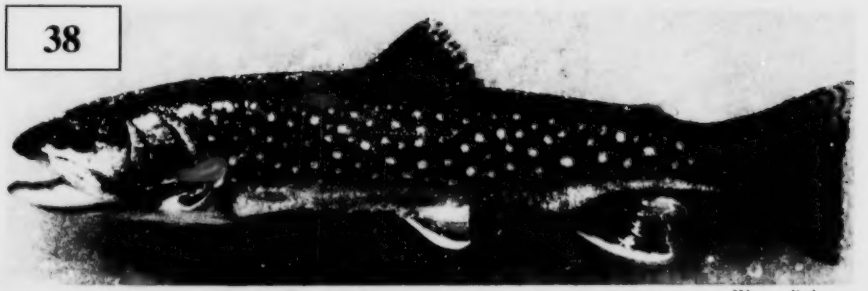
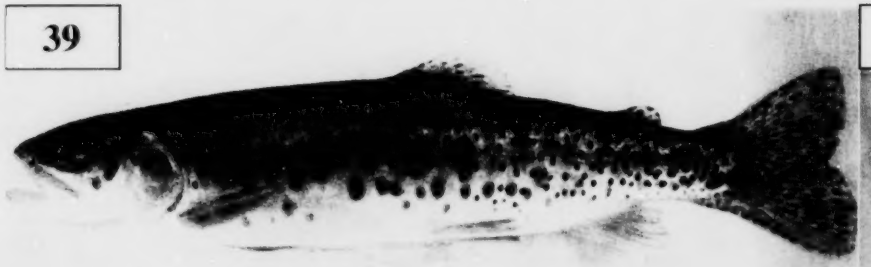


Jim Stelfox

Dean Baayens



Wayne Roberts



Jim Stelfox

Brad Fenson

6.0 TEST ANSWER SHEET

Name_____ Date_____ **First attempt. Second attempt.** *(Circle one)*

Please circle the appropriate response to the following questions in Section **A.**

(A) Do you fish? **Yes; No.** *(If yes, then answer questions 1-3. If no, then go to Section* **B**.*)*

1) How many years have you been fishing? **<1; 1-10; >10 years**.

2) On average, how many days per year do you fish? **<5; 5-20; >20 days**.

3) On average, how many trout per year do you harvest? **0; 1-5; 6-10; >10 trout**.

(B) *Please place a check (✓) mark in the appropriate column. Do not be fooled by the considerable differences in colouration that can occur between male, female, adult and juvenile fish. Focus on the key identifying features.*

		WHITEFISH		***TROUT***			***CHAR***		
Photo	**Arctic grayling**	**Lake whitefish**	**Mountain whitefish**	**Brown trout**	**Cutthroat trout**	**Rainbow trout**	**Bull trout**	**Lake trout**	**Brook trout**
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									

		WHITEFISH		*TROUT*			*CHAR*		
Photo	**Arctic grayling**	**Lake whitefish**	**Mountain whitefish**	**Brown trout**	**Cutthroat trout**	**Rainbow trout**	**Bull trout**	**Lake trout**	**Brook trout**
17									
18									
19									
20									
21									
22									
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24									
25									
26									
27									
28									
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32									
33									
34									
35									
36									
37									
38									
39									
40									
Number wrong									

Thank you for your participation.

Total number wrong: ____

Test administered by: _____

Score: ____% right

7.0 TEST GRADING TEMPLATE

Name_____ Date_____ **First attempt. Second attempt.** *(Circle one)*

Please circle the appropriate response to the following questions in Section **A.**

(A) Do you fish? **Yes; No.** *(If yes, then answer questions 1-3. If no, then go to Section* **B.***)*

1) How many years have you been fishing? **<1; 1-10; >10 years.**

2) On average, how many days per year do you fish? **<5; 5-20; >20 days.**

3) On average, how many trout per year do you harvest? **0; 1-5; 6-10; >10 trout.**

(B) *Please place a check (✓) mark in the appropriate column. Do not be fooled by the considerable differences in colouration that can occur between male, female, adult and juvenile fish. Focus on the key identifying features.*

		WHITEFISH		***TROUT***			***CHAR***		
Photo	**Arctic grayling**	**Lake whitefish**	**Mountain whitefish**	**Brown trout**	**Cutthroat trout**	**Rainbow trout**	**Bull trout**	**Lake trout**	**Brook trout**
1									
2									
3									
4									
5									
6									
7									
8									
9									
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16									

		WHITEFISH		*TROUT*			*CHAR*		
Photo	**Arctic grayling**	**Lake whitefish**	**Mountain whitefish**	**Brown trout**	**Cutthroat trout**	**Rainbow trout**	**Bull trout**	**Lake trout**	**Brook trout**
17									
18									
19									
20									
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Number wrong									

Thank you for your participation.

Total number wrong: ____

Test administered by: _____

Score: ____% right

8.0 GLOSSARY

adipose fin – a small rayless fleshy lope located on the back between the dorsal fin and tail (sometimes may look like a scar from fin clip done during biological study).
anal fin – a prominent, unpaired fin located on the mid-line of the underside of the fish near the tail.
caudal fin – the tail fin.
dorsal fin(s) – prominent, unpaired fin or fins located on the mid-line of the back of the fish.
fin rays – supports (lines) in the fin holding the membrane.
gill cover – the flap (large thin bones) that cover the gills on each side of the head.
haloes – the pale or bluish ring around coloured spots on the sides of the body on some fish.
pectoral fins – paired fins located on sides near the gill area (*'arms'*).
pelvic fins – paired fins located on ventral area near the head or further back on the belly (*'legs'*).
snout – the part of the head (*'nose'*) in front of the eyes.